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2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons

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Actions 5, 20 and 21 of the action plan of the 2010 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons*

Report submitted by the United States of America

As provided in the 2010 Nuclear Non-Proliferation Treaty (NPT) Review Conference Action Plan, the Governments of the five NPT nuclear-weapon states, or "P5," are working to implement Action 5 to "(f)urther enhance transparency and increase mutual confidence" and to make national reports on our Action 5 and other undertakings to the 2014 NPT Preparatory Committee under a common framework, consistent with Actions 20 and 21. Action 21 states "As a confidence-building measure, all the nuclear-weapon States are encouraged to agree as soon as possible on a standard reporting form and to determine appropriate reporting intervals for the purpose of voluntarily providing standard information without prejudice to national security." The framework we use for our national reports includes common categories of topics under which relevant information is reported, and it addresses all three pillars of the NPT: disarmament, non-proliferation, and peaceful uses of nuclear energy. We encourage all States Parties, consistent with Action 20, to make similar reports.

Having provided our initial report to the 2014 NPT Preparatory Committee, here we provide an update including actions in the past year for the 2015 NPT Review Conference.

Section I: Reporting on National Measures Relating to Disarmament

i. Nuclear Security Policies, Doctrine and Activities Associated with Nuclear Weapons

Nuclear Policy

- U.S. policy is to achieve the peace and security of a world without nuclear weapons, in line with our NPT commitments. We are committed to pursuing a

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transparent step-by-step approach to nuclear disarmament, building on negotiated agreements and cooperative activities, so that we can continue to move beyond Cold War nuclear postures.

- The United States completed a Nuclear Posture Review (NPR) in 2010 that lays out our strategy for reducing the number and role of nuclear weapons in our defines posture. The new strategy makes clear the following.
  - The fundamental role of U.S. nuclear weapons remains to deter nuclear attack on the United States and its allies and partners.
  - The United States would only consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the United States or its allies and partners.
  - It is a global interest that the nearly 70-year record of non-use of nuclear weapons be extended forever.
  - U.S. policy is to maintain a credible deterrent with the lowest possible number of nuclear weapons, consistent with our current and future security requirements.
  - Nuclear plans must be consistent with the fundamental principles of the Law of Armed Conflict, and will apply the principles of distinction and proportionality and will not intentionally target civilian populations or civilian objects.
  - We are working to establish conditions in which the United States can safely adopt a policy of making deterrence of nuclear attack the sole purpose of U.S. nuclear weapons and continuing to strengthen conventional capabilities and missile defences as part of our broader efforts to reduce the role of nuclear weapons.
- Underscoring the security benefits of adhering to and fully complying with the NPT, the United States strengthened its long-standing "negative security assurance" by declaring that the United States will not use or threaten to use nuclear weapons against non-nuclear weapons states that are party to the NPT and in compliance with their nuclear non-proliferation obligations.
- The United States has also made clear its readiness to provide negative security assurances within a legal framework through support for relevant Protocols to the existing five Nuclear-Weapon-Free Zone Treaties.

Changes to Nuclear Force Posture and Alert Posture

- The new U.S. nuclear strategy outlined in the NPR builds on the significant reductions in our nuclear force posture taken since the end of the Cold War and aims to further limit the potential for accidental launch by enhancing the safety, security, and surety of the U.S. arsenal, while also maximizing the decision time available to the President in the event of a crisis.
- Actions and practices affecting the posture of U.S. nuclear forces include the following:
  - **As of June 16, 2014, the United States completed the reconfiguration** of all deployed intercontinental ballistic missiles (ICBMs) so that each

missile only carries a single nuclear warhead (a process known as "de-MIRVing," whereby all independently targetable re-entry vehicles but one are removed). Reducing the concentration of deployed warheads increases stability by lowering possible incentives for others to launch a nuclear first strike;

- Continuing the practice of "open-ocean targeting" of all deployed ICBMs and submarine-launched ballistic missiles (SLBMs), such that in the extremely unlikely event of an accidental launch, the missile's payload would land in the open ocean;
- Continuing the practice of keeping all nuclear-capable bombers and dual-capable aircraft (DCA) off of day-to-day alert;
- Emphasizing the goal of maximized decision time for the President in the event of a crisis, including by making new investments in U.S. command and control systems; and,
- Directing the Defense Department to examine options to reduce the role of Launch Under Attack in U.S. nuclear planning, recognizing that the potential for a surprise, disarming nuclear attack is exceedingly remote.

Nuclear Weapons Surety

- **The United States recognizes that nuclear weapon systems require extraordinarily special consideration because of their destructive potential. In that regard, the United States takes a variety of measures to ensure that nuclear weapons remain safe, secure, and under positive control — a concept we term "nuclear surety," which is an overriding national priority. This involves significant science and engineering efforts that draw on the lessons of the past and are aimed at preventing an accidental or inadvertent detonation, as illustrated below.**
  - **U.S. nuclear weapons incorporate safety design features that minimize the possibility of nuclear detonation due to accidents, errors, or acts of nature. Examples include the isolation of components essential to detonation from all forms of significant electrical energy, such as lightning or power surges, and fire-resistant pits.**
  - **Another safety feature of certain U.S. nuclear weapons designs is the use of insensitive high explosive (IHE) as opposed to conventional high explosive. IHE is much less sensitive to shock or heat and highly resistant to accidental detonation.**
  - **U.S. nuclear weapons apply additional measures to include the enhanced nuclear detonation safety concept to ensure that safety-critical components respond to abnormal environments in a predictably safe manner.**
    - **Abnormal environments include conditions that could occur in credible accidental or unusual situations, including an aircraft accident, lightning strike, shipboard fire, or a bullet, missile, or fragmentation strike.**

- **The United States has made public the safety design requirements under different environmental conditions (e.g., drop testing and fire safety design).**
- **U.S. "use control" design features preclude or delay unauthorized nuclear detonation through electronic and mechanical features. Examples include permissive action links, command disablement to render warheads inoperable, and active protection systems that disable critical warhead components when tampering is detected.**
- **U.S. nuclear weapons employ environmental sensing devices, such as accelerometers, contained in the arming circuit of a weapon providing both safety and control. This prevents inadvertent functioning of the circuit until the weapon is launched or released and experiences environmental parameters specific to its particular delivery system.**
- **The stockpile is assessed annually to ensure that safety and use control devices and components meet requirements and are performing effectively. Surety requirements are addressed during all phases of the nuclear weapon life cycle.**

ii. Nuclear Weapons, Nuclear Arms Control (including Nuclear Disarmament) and Verification

Nuclear Weapons Reductions

- The United States continues a decades-long, step-by-step effort to reduce and eventually eliminate nuclear weapons. We have reduced our nuclear weapons stockpile by approximately 85 percent since its Cold War peak, or about an 82 percent reduction since 1970, when the NPT entered into force.
- A major step along this path is the U.S.-Russia New START Treaty, which when fully implemented by February 2018 will cap U.S. and Russian deployed strategic warheads at 1,550, the lowest levels of these weapons since the late 1950s.
  - On April 8, 2014, the United States announced the future composition of the U.S. nuclear force structure in order to comply with the Treaty's limits by 2018. The updated strategic force structure will require reductions in all three legs of the U.S. nuclear Triad. **Specifically, 50 ICBMs will be removed from their silos, four launch tubes on each of the 14 strategic ballistic missile nuclear submarines (SSBN's) will be rendered incapable of launching an SLBM, and 30 B-52 heavy bombers will be converted verifiably to a conventional only role.** These actions will result in no more than 1,550 warheads deployed on:
    - 400 deployed ICBMs;
    - 240 deployed SLBMs on 14 SSBNs; and,
    - 60 deployed nuclear-capable bombers.
  - **As of March 1, 2015, the number of U.S. deployed strategic warheads under the New START Treaty was 1,597 on 785 deployed ICBMs, SLBMs, and heavy bombers.**

- As President Obama stated in Berlin in 2013, the United States is prepared to negotiate further nuclear reductions with Russia of up to one-third in the deployed strategic warhead levels established in the New START Treaty.
- The United States remains open to seeking negotiated reductions with Russia in all categories of nuclear weapons — strategic and non-strategic, deployed and non-deployed.
- These actions extend the legacy of U.S. leadership on nuclear arms control and disarmament, which includes many other signal achievements.
  - *The 1987 Intermediate-Range Nuclear Forces Treaty* eliminated all U.S. and Soviet Union ground-launched missiles with a maximum range between 500 and 5,500 km and permanently prohibited the parties from possessing, producing, or flight-testing those missiles, and from possessing or producing launchers of such missiles. The Treaty is of unlimited duration.
    - All U.S. ground-launched ballistic missiles (GLBMs) and U.S. ground-launched cruise missiles (GLCMs) were eliminated by 1991, to include 403 Pershing IA and IB and Pershing II GLBMS and 443 Tomahawk GLCMS — 846 total missiles.
  - *The 1991 Strategic Arms Reduction Treaty (START)*, the most sweeping and complex arms control agreement negotiated in history, limited U.S. and Russian attributed strategic nuclear warheads to 6,000 on no more than 1,600 deployed ICBMs, SLBMs, and heavy bombers.
    - Between September 1990 and July 2009, the United States under START reduced the number of deployed strategic launchers (ICBMs, SLBMs, their associated launchers, and deployed heavy bombers in its arsenal) from 2,246 to 1,188, a 47 percent reduction, and nuclear warheads attributed to these launchers from 10,563 to 5,916, a 44 percent reduction.
  - *The 2002 Strategic Offensive Reductions Treaty (or Moscow Treaty)* limited the United States and Russia to no more than 1,700 to 2,220 operationally deployed strategic nuclear warheads (ODSNW) by 2012.
    - The U.S. aggregate number of ODSNW was 1,944 as of February 2011, when the Treaty was superseded by the New START Treaty.
  - *National Measures*: In addition to treaty-based reductions, the United States has made dramatic and deep cuts to its Cold War arsenal, including through the 1991 and 1992 "Presidential Nuclear Initiatives (PNIs)," which eliminated approximately 3,000 U.S. nuclear weapons and resulted in an approximately 90 percent reduction in all U.S. tactical nuclear weapons. These national measures included the following:
    - Elimination of all 450 Minuteman II ICBM silo launchers and all 50 Peacekeeper ICBM silo launchers, as well as 50 Minuteman III silo launchers;
    - Removal of four SSBNs from strategic (nuclear) service and reducing the number of warheads on each of the remaining deployed submarines;

- Retiring all FB-111A bombers, eliminating all B-52G heavy bombers, and converting all B-1B heavy bombers to conventional-only capability;
- Withdrawal to the United States of all ground-launched tactical nuclear weapons with a range less than 300 miles;
- Elimination of all U.S. nuclear artillery shells and warheads for short-range ballistic missiles;
- Removal of tactical nuclear weapons from all naval combatant vessels;
- Removal of all nuclear command and control aircraft from constant airborne alert; and
- Retiring the AGM-129 Advanced Cruise Missile and the AGM-69 Short-Range Attack Missile (both air-to-ground missiles).

U.S. Nuclear Stockpile Transparency

- At the May 2010 NPT Review Conference, the United States released for the first time its nuclear stockpile totals, detailing annual stockpile levels from 1962 to 2009 and annual totals of nuclear weapons dismantled from 1994 to 2009.
- **Today, the United States has the smallest stockpile since 1956.**
- The United States has retired many thousands of nuclear warheads. Retired warheads have been removed from their delivery platform, are not functional, and are in the queue for dismantlement.
- **The United States declassified and reported its nuclear warhead stockpile in 2010 and 2014.**
- **In 2015, the United States again declassified its nuclear stockpile data through the end of fiscal year 2014. As of September 30, 2014, the total stockpile of active and inactive nuclear warheads was 4,717.**
- **An additional 299 warheads have been dismantled since September 30, 2013, with a total of 10,251 warheads dismantled between 1994 and 2014.**
- **In 2015, the United States reported that approximately 2,500 warheads are retired and awaiting dismantlement.**
- These actions have resulted in about an 85 percent reduction in total nuclear weapons in our stockpile since the height of the Cold War, or about 82 percent reduction since 1970 when the NPT entered into force.
- Since 1992, the United States has retired and dismantled 12 nuclear weapon types, including the most recent types: the W79, W62, W56, and the B53.
- The last W80-0 warhead for the Tomahawk Land Attack Missile-Navy (TLAM-N) was retired from service and has been dismantled.
- **The United States announced in April 2015 that President Obama will seek funding to accelerate dismantlement of retired U.S. nuclear warheads by 20 percent.**

- It is U.S. policy not to develop new nuclear weapons. Life extension programs for remaining nuclear warheads will not support new military missions or provide for new military capabilities for nuclear weapons.
  - **Stockpile Stewardship and Management Programs to replace aging infrastructure and extend the life of existing warheads can enable further nuclear reductions while maintaining a credible deterrent.**
  - **These activities advance U.S. planning for implementation of the Comprehensive Nuclear-Test-Ban Treaty, which the United States has signed and intends to ratify.**
  - **The "3+2" strategy consolidates nuclear weapon types from twelve to five, including consolidating from four variants of the B61 gravity bomb into one (B61-12), allowing the B83, the last megaton-class weapon in the U.S. arsenal, to be retired, and reducing the number of bombs by a factor of two.**

Fissile Material Reductions and Facility Consolidation

- In addition to information on the nuclear weapon stockpile, the United States has made public the total amounts of U.S. plutonium and highly enriched uranium (HEU) produced by the weapons program for military or non-military use.
- In 2009, the United States reported the plutonium inventory was 95.4 metric tons (MT). In 1994 and 2007, the United States declared 61.5 MT of plutonium as excess and removed from further use as fissile material for use in nuclear warheads.
- The U.S.-Russian Plutonium Management and Disposition Agreement (PMDA) requires the United States and Russia each to dispose of no less than 34 MT of weapon-grade plutonium each country has declared excess to defense needs. The United States remains committed to the PMDA and to an International Atomic Energy Agency (IAEA) role in verifying both sides' disposition programs under this agreement.
- **Implementation of the U.S.-Russia Plutonium Production Reactor Agreement is ongoing. Under this agreement all weapon-grade plutonium produced since 1995 by these now-shutdown reactors remains outside of military programs, and the reactors are under bilateral monitoring.**
- The total U.S. HEU inventory as of 2004 was 686.6 MT. In declarations in 1994 and 2005, the United States declared that a significant portion of that inventory totalling 374 MT of HEU would be removed from further use as fissile material in nuclear warheads.
  - To date, the United States has down-blended a total of more than **146** metric tons of HEU from these declarations — enough material for more than **5,800** nuclear weapons. The total amount of down-blended HEU will continue to increase as the current down-blending effort for additional material progresses. **Down-blending removes this material from further use as fissile material in nuclear warheads.**
    - 17.4 MT of this HEU was down-blended to low-enriched uranium (LEU) in facilities eligible for IAEA safeguards under the Voluntary

Offer Agreement for use in the American Assured Fuel Supply, a U.S. swords-to-ploughshares initiative that provides back-up LEU fuel assurances to U.S. partners in the event of a disruption in supply.

- In total, **the United States has down-blended more than 50 MT of excess HEU to LEU under IAEA monitoring**. The cost for this monitoring was covered in full by the United States.

- Up to 160 MT of the excess HEU will be provided for use in naval ship power propulsion, postponing the need for production of new HEU or construction of a new HEU enrichment facility for many decades.

- In the most important nuclear non-proliferation achievements of the post-Cold War period, the United States and Russia successfully completed the major non-proliferation, peaceful use, and disarmament goals of the 1993 United States-Russia HEU Purchase Agreement. Under this landmark Agreement, 500 metric tons of Russian weapons-origin HEU was converted to LEU and shipped to the United States where it was used for peaceful purposes as fuel in American nuclear power reactors.

  - This Agreement eliminated approximately 20,000 nuclear warheads equivalent of Russian, weapons-origin HEU, with the resulting downblended LEU used to produce half of all nuclear energy generated annually in the United States for the ten year period from 2003-2013. **Approximately ten percent of all electricity produced in the United States during this period came directly from the nuclear fuel from the elimination of former Soviet nuclear warheads.**

  - **The amount of nuclear material downblended under the HEU Purchase Agreement was equivalent to roughly three warheads worth of HEU per day for most of the last two decades.**

  - During the 20-year Agreement, both countries exercised reciprocal transparency monitoring in their respective nuclear facilities to ensure that all HEU processed in Russia was of weapons-origin and that all LEU produced from that material was used for exclusively peaceful purposes in the United States.

- In parallel to reductions in the U.S. stockpile, the United States has consolidated the number of sites needed to maintain it. Today's current nuclear complex is smaller and geared to support not only our enduring nuclear weapons stockpile through science-based stewardship, but also our capability to address proliferation, terrorism, and other global threats.

- In 1980, the nuclear complex was made up of 14 sites. Today, it consists of eight, and its workforce has been reduced by two-thirds since the end of the Cold War.

- **From a high point of approximately 10,600 square kilometres in the early 1980s, the size of the complex has shrunk to approximately half its original size, 5,600 square km.**

- Key actions to reduce the complex include the following:

- Cessation of production of plutonium for weapons in 1987 and closure of all plutonium production reactors at the Hanford Site in Richland, Washington, and at the Savannah River Site in Aiken, South Carolina;
- Closure and decommissioning of the Hanford Site nuclear reprocessing plants;
- Cessation of production of HEU for weapons in 1964 and shutdown of the K-25 enrichment complex in Oak Ridge, Tennessee;
- Conversion of enrichment plants in Portsmouth, Ohio, and Paducah, Kentucky, to support civil nuclear fuel production only;
- Closure and decommissioning of the Feed Materials Production Center at Fernald, Ohio, the Rocky Flats plutonium pit production facility in Colorado, and the Mound and Pinellas plants for nuclear weapons components in Miamisburg, Ohio, and Pinellas, Florida;
- Removal of Category I/II Special Nuclear Materials (SNM), quantities large enough to construct nuclear devices, from Sandia National Laboratories, the Lawrence Livermore National Laboratory, and Technical Areas 3 and 18 at Los Alamos National Laboratory, as well as consolidation of Category I/II material into TA-55 at Los Alamos;
- Consolidation of HEU storage into the newly constructed HEU Materials Facility at Y-12 in Oak Ridge, Tennessee; and
- Consolidation of non-pit plutonium into the K-Area Materials Storage (KAMS) facility at the Savannah River Site.

- The United States has not conducted a nuclear explosive test since 1992. The former Nevada Test Site has been re-named the Nevada National Security Site and today supports an expanded mission to include stockpile stewardship but also a range of activities supporting research and development of technologies to support non-proliferation goals.
- Looking forward, the new U.S. nuclear strategy anticipates shifting from retaining large numbers of non-deployed nuclear warheads towards a more responsive infrastructure over time. We are investing in a more modern physical infrastructure that would allow for further reductions in total nuclear forces.

Multilateral Arms Control

- The United States reaffirms its commitment to negotiate a treaty banning the production of fissile material for use in nuclear weapons or other nuclear explosive devices, also known as Fissile Material Cutoff Treaty (FMCT).
- As an interim step, the United States actively participated in the UN Group of Governmental Experts (GGE) that will make recommendations on possible aspects that could contribute to an FMCT. We are hopeful that this two-year GGE, which first convened in Geneva in March 2014, will serve to motivate and revitalize work on FMCT and progress within the Conference on Disarmament (CD).

- The Comprehensive Nuclear-Test-Ban Treaty (CTBT) is in the security interest of every nation, and the United States remains committed to ratifying the CTBT and bringing it into force.
- The United States makes the largest annual financial contribution to the CTBTO Preparatory Commission, paying more than 22 percent of the Commission's annual budget. With U.S. assistance, **as of December 31, 2014**, the **total number of certified International Monitoring System (IMS) stations and radionuclide laboratories completed was 281. This amounts to 83 percent of the total network.**
- The United States is helping to develop the on-site inspection (OSI) element of the CTBT's verification regime. Through significant U.S. voluntary contributions-in-kind of equipment, expertise, and research, the United States **played a major role in supporting** the largest ever on-site inspection Integrated Field Exercise conducted in Jordan in December 2014.
- Through 2015, the United States, along with the rest of the P5, convened a series of meetings of technical experts to discuss and identify areas for future P5 collaboration on CTBT-related issues.

Verification, Including Research and Development

- Effective verification is an essential condition for non-proliferation, arms control and achieving a world without nuclear weapons. Verification methods and technologies capable of detecting violations and monitoring compliance must be in place as states move step-by-step toward nuclear disarmament.
- Transparency through information sharing and confidence-building measures contribute to stability and security by enhancing predictability and building trust and confidence.
- Verification under the New START Treaty increases stability and predictability between the world's largest nuclear powers. The Treaty's robust and extensive verification provisions provide mutual confidence that both sides are living up to their obligations. The accurate and timely information shared between the United States and Russia on each side's respective nuclear forces diminishes the risks of misunderstanding and misperception. The Treaty's verification regime includes the following:
  - 18 short-notice on-site inspections of both deployed and non-deployed nuclear ICBMs, SLBMs, and heavy bombers each year for each party that are more intrusive than those conducted under the previous START agreement, allowing each party to confirm the actual number of deployed warheads on ICBMs and SLBMs or nuclear armaments on heavy bombers;
  - **Additional exhibitions and demonstrations of certain items subject to the Treaty;**
  - National technical means to improve verification effectiveness; and,
  - An extensive system of notifications to inform the other party when changes occur to the Treaty's database, such as movements, flight tests, and deployments of Treaty-accountable items. As of April **2015**, the

United States and Russia have exchanged over **8,300** such notifications through their respective Nuclear Risk Reduction Centers in Washington, D.C., and Moscow.

- To date, more than **150** on-site inspections have been conducted by the United States and Russia under the New START Treaty. Treaty on-site inspections and other verification measures enable each side to maintain confidence in the validity of data exchanged by the United States and Russia.
- Looking to the future and in keeping with our NPT commitments, the United States is supporting a range of research and development (R&D) activities, expanding our work on verification technologies needed for future agreements. We are making multi-million dollar investments each year to advance these capabilities.
- **The United States launched a new initiative — the International Partnership for Nuclear Disarmament Verification — to bring together nuclear-weapon and non-nuclear-weapon states to address future nuclear disarmament verification challenges. A kick-off meeting was held in Washington, D.C. on March 19-20, involving participants from 28 states, the European Union, and the Holy See.**
- **Goals of the International Partnership are to assess and potentially develop approaches addressing monitoring and verification challenges across the nuclear weapons lifecycle — including material production and control, warhead production, deployment, storage, dismantlement, and disposition. The Partnership will build on lessons learned from efforts such as the U.S.-UK Technical Cooperation Program and the UK-Norway Initiative. The U.S. Government will work with the Nuclear Threat Initiative through an official public-private partnership.**
- **Since 2000, the United States and United Kingdom have engaged in an extensive program of cooperation under the 1958 Mutual Defense Agreement to develop and evaluate methodologies and technologies required to verify future nuclear weapon reduction initiatives. This work includes:**
  - **evaluating managed-access procedures at nuclear weapons facilities;**
  - **developing procedures to confirm declared nuclear weapon attributes;**
  - **examining the chain of custody for nuclear weapons and components;**
  - **evaluating the monitored storage of nuclear weapons, components, and materials;**
  - **developing procedures for the authentication of inspection equipment; and,**
  - **enabling the testing of technology in operational environments.**
- Through our work with the UK and other partners, U.S. verification research initiatives develop capabilities to address major technical challenges, such as monitoring of warheads, including non-deployed warheads in storage, as well as capabilities to distinguish warheads by type.
  - The United States is conducting a nuclear warhead modelling and measurement campaign to establish a comprehensive nuclear warhead

and component signature set. The resulting data will support assessment of sensitive information that could be revealed as a result of future treaty verification activities, and will further guide future R&D in the areas of radiation detection and information protection.

- The United States is conducting field demonstrations and evaluations of nuclear warhead lifecycle "end-to-end" monitoring capabilities, to include warhead storage and transportation monitoring demonstrations and evaluations at the Nevada National Security Site. Technologies are being developed and assessed to provide assurance to a potential monitoring party that nuclear warheads are accounted for and tracked throughout their lifecycle, including during long-term storage and dismantlement.
- **In a major effort through 2018 with the Department of Energy's National Laboratories, the United States will examine procedures and technology required for the monitored dismantlement of nuclear weapons, building on a three-year chain-of-custody project that culminated in demonstration experiments in January 2014, which:**
  - **developed a representative environment for testing and evaluating technology research and development (R&D) of chain-of-custody technologies and carried out a series of technical evaluations; and,**
  - **developed technologies to support accountability of warheads including evaluating the potential feasibility of a real-time system for counting items of inspection using radio-frequency identification (RFID) tags and tested its potential use in an inspection scenario.**

- The United States is also pursuing R&D to enhance other future arms control treaties, including:
  - technologies to support the CTBT, including completion of field experiments and demonstrations to further our understanding of underground nuclear event seismic signatures;
  - activities evaluating CTBT-related technologies for effectiveness and intrusiveness, optimizing visual observation, seismic and acoustic sensing, multi-spectral imaging, and radionuclide transport and measurement; and,
  - development of monitoring capabilities for defined fissile material production facilities and for possible inspections at sensitive U.S. sites.

iii. Transparency and Confidence-Building Measures

- **In March 2015, the United States hosted a visit to the Los Alamos and Sandia National Laboratories for representatives from 11 NPT non-nuclear weapon States Parties and the UN Office of Disarmament Affairs. The visit included briefings, tours, and exchanges on U.S. stockpile stewardship and management activities, and the role played by the national laboratories in support of the President's arms control and non-proliferation agenda.**

The P5 Conference Process

- The United States is committed to engaging its P5 partners to advance all aspects of the NPT. P5 activities are an essential means for laying the foundation for future agreements that could involve parties beyond the United States and Russia.
- The P5 are pursuing regular dialogue on nuclear weapons-related issues to an extent unseen in prior years. The United Kingdom hosted the sixth P5 Conference in London in February 2015, following the 2009 London, 2011 Paris, 2012 Washington, 2013 (Russia-hosted) Geneva, and 2014 Beijing Conferences. Each Conference has built on the success of the last and an increasing amount of P5 intersessional work.
- At these Conferences the P5 have exchanged views on their nuclear doctrines, strategic stability, and international security from their individual country perspectives to gain better understanding and build strategic trust.
- **The United States and Russian Federation have briefed the other P5 states on their nuclear arms control verification and notification experience to foster greater familiarity with practical arrangements that promote the irreversibility, transparency, and verifiability of the disarmament process.**
- The United States participated in the P5 Working Group to create a "Glossary of Definitions of Key Nuclear Terms" chaired by China. The group will **release a first edition of the glossary at the 2015 NPT Review Conference. At the London P5 Conference in February 2015, the P5 noted their intention to revise and update the Glossary in the future.** This work substantially contributes to NPT goals by improving mutual understanding of key arms control and non-proliferation concepts and can help lay the groundwork for eventual nuclear negotiations that involve all five states.
- **U.S. experts are working with P5 counterparts to review P5 collaboration on improving and maintaining the CTBT verification regime and to identify ways our unique experience can contribute to further strengthening the CTBT monitoring regime.**
- **The United States hosted a CTBT-related workshop, with participation by all P5 states, on data quality objectives for On-Site Inspection equipment.**
- **The P5 released a statement in February 2015 encouraging states to undertake efforts to minimize the impact of xenon gas released into the environment from medical isotope production on the CTBT's International Monitoring System.**
- The United States hosted France and the United Kingdom for a transparency visit to the Nevada National Security Site (the former Nevada Test Site) in 2013. The United States and United Kingdom also briefed our P5 partners on cooperative work developing verification procedures and technologies.
- P5 engagement is a long-term investment in strengthening the NPT, building trust, and creating a stronger foundation for the work required to achieve a world without nuclear weapons. **We will continue working to advance P5 engagement, particularly on verification work, building on past**

experience and the need to address difficult challenges we will face in monitoring future agreements.

Other Confidence-Building Measures and Agreements

- *The Direct Secure Communication System*, also known as the "Hotline," is an emergency and non-emergency secure communication system intended for use by the highest leadership of the United States and Russia (since 1963) and with China (since 1998). The system is maintained by each government to ensure that leaders are prepared to manage the full range of national security crises we face internationally.

- *The U.S. Nuclear Risk Reduction Center (NRRC)*, **located in the Department of State, provides the U.S. Government with 24-hour, seven-day-a-week, direct government-to-government communications in support of fourteen international, agreements, treaties, and arrangements on nuclear, conventional, chemical and cyber issues, with the four nuclear state successors to the Soviet Union, the over 50 participating States of the Organization for Security and Cooperation in Europe, and the Organization for the Prohibition of Chemical Weapons. The NRRC processes approximately 14,000 notifications annually, providing translations for notifications in five languages, with the capacity to add additional countries and languages at need.**

- *The Accidents Measures Agreement* (Agreement on Measures to Reduce the Risk of Outbreak of Nuclear War Between the United States of America and the Union of Soviet Socialist Republics) *and the Agreement on Measures to Improve the USA-USSR Direct Communications Link* (with Annex, Supplementing and Modifying the Memorandum of Understanding with Annex, of June 20, 1963) were signed and entered into force in 1971, inter alia, to provide for certain immediate or advance notification and to facilitate urgent communications via the "Hotline."

- *The Ballistic Missile Launch Notification Agreement (Agreement on Notifications of Launches of Intercontinental Ballistic Missiles and Submarine Launcher Ballistic Missiles) (BMLNA)* was signed in 1988. Pursuant to this Agreement, the United States and Russia agreed to provide each other with notifications, no less than 24 hours in advance, of dates, launch areas, and impact sites for any test launch of an ICBM or SLBM. Notifications of launches under the New START Treaty are provided in accordance with the BMLNA.

- *The Hague Code of Conduct against Ballistic Missile Proliferation (HCOC)* was adopted at a November 2002 conference by 93 countries in The Hague. Under the Code's voluntary transparency and confidence-building measures, the United States politically commits to provide pre-launch notification of launches of ballistic missiles and space launch vehicles (the NRRC assists in the notification process), as well as submits annual declarations of our space and ballistic missile policies.

- *The U.S.-Russia Presidential Declaration on Mutual Detargeting*, issued in January 1994, announced the commitment of both sides to ensure that, by May 1994, the United States and Russia no longer had ICBMs and SLBMs targeting

each other. In the highly unlikely event of an accidental launch of a U.S. nuclear weapon, the weapon would land in the open ocean.

iv. Other Related Issues

Examples of Resources Devoted to Disarmament Treaty Implementation, Inspections, and Dismantlement

- The United States expends considerable resources in fulfilment of its commitments under the many disarmament and arms control agreements and arrangements that it has implemented.
- The United States is committed to funding nuclear weapons dismantlement, and plans to dismantle all nuclear weapons retired prior to 2009 no later than the end of Fiscal Year 2022. **This dismantlement plan is currently 10% ahead of schedule. The United States announced in April 2015 that President Obama will seek funding to accelerate dismantlement of retired U.S. nuclear warheads by 20 percent.** The United States has spent over **$225** million on weapons dismantlement in the past five years.
- Transitioning the deployed nuclear force structure to meet the 2018 limits of the New START Treaty is expected to cost $300 million from fiscal years 2014 to 2018.
  - **During calendar year 2014, the United States eliminated 52 ICBM silos for the Minuteman III and one for the Peacekeeper, completing the elimination of 103 ICBM silos to date under the New START Treaty. The cost of these eliminations alone was approximately $20 million. The United States also hosted 18 inspections.**
  - In addition, the United States **continued** the conversion process to render inoperative some launchers of submarine-launched ballistic missiles on U.S. submarines. **The cost of these conversions exceeded $50 million in 2014.**
- **In 2014, the U.S. Air Force spent $147.7 million on verification of foreign compliance with nuclear arms control and non-proliferation treaties.**
- **Since 2000, the United States has spent approximately $40 million on cooperative work with the United Kingdom to evaluate methodologies and technologies required to verify future nuclear weapon reductions; the United Kingdom contributed a commensurate sum.**
- **Since 2011, the United States has spent $60 million on the National Nuclear Security Administration's work with its National Laboratories to look at procedures and technologies required for the monitored dismantlement of nuclear weapons.**
- The United States continues to make substantial investments in R&D to support future nuclear arms control agreements and requirements. In **2014**, the U.S. **National Nuclear Security Administration and the Defense Threat Reduction Agency funded over $191 million for Research, Development, Test and Evaluation of arms control verification technology.**
- **The United States spent $380 million on the surety of U.S. nuclear weapons from 2010-2015.**

- The United States makes the largest annual financial contribution to the CTBTO Preparatory Commission, paying more than 22 percent of the Commission's annual budget.
    - From 1996 through **2014**, the United States has contributed over **$377 million** through its annual assessment.
    - Since 2011, the United States has funded over $23 million of contributions-in-kind projects to the Provisional Technical Secretariat (PTS) to accelerate the development of the verification regime and to improve its capabilities.
    - The United States has contributed another $25.5 million to rebuild the Crozet Island hydroacoustic station of the IMS.
- **In 2014, the U.S. National Nuclear Security Administration's enacted budget was $567 million for the safe and secure storage and handling and disposition of surplus fissile material, including construction of disposition facilities.**

Section II: Reporting on National Measures Relating to Non-proliferation

i. Safeguards

- The United States laid out a broad agenda to prevent the spread of nuclear weapons in 2009. In addition to nuclear disarmament and peaceful uses of nuclear energy, the agenda includes measures to strengthen the NPT and IAEA safeguards as a basis for cooperation and confront the threat of nuclear terrorism both in the United States and other countries.
- **In 2008, the Department of Energy's National Nuclear Security Administration (NNSA) established the Next Generation Safeguards Initiative (NGSI) to develop the policies, concepts, technologies, expertise and infrastructure necessary to strengthen and sustain the international safeguards system as it evolves to meet new challenges. NGSI has focused on renewing U.S. capabilities to support international safeguards, and is intended to serve as a catalyst for a broader international commitment to support international safeguards. In 2015, NGSI has a budget of approximately $50M.**

U.S. Safeguards

- **Before the NPT and the Voluntary Offer Agreement (VOA) entered into force, the United Sates pioneered IAEA on-site inspections at select U.S. nuclear facilities during the 1960s.**
- The United States brought into force a safeguards agreement in 1980 (also known as the U.S. Voluntary Offer Agreement — VOA) and Additional Protocol (AP) in 2009. These agreements contain the standard provisions for safeguards implementation and demonstrate our readiness to accept safeguards on civil nuclear activities.

- The United States has made eligible for IAEA safeguards nearly 300 civil nuclear facilities, including power reactors, research reactors, commercial fuel fabrication plants, uranium enrichment plants, and other types of facilities. This list of U.S. nuclear facilities that are eligible for IAEA inspections is routinely updated and provided to the IAEA.
- Additionally, the United States has made three fuel fabrication facilities and one enrichment facility available for IAEA inspections to verify declared facility design information (and changes to the design) under the Reporting Protocol to the VOA.

• The United States has hosted over **800 IAEA inspections** conducted at facilities on this U.S. list. Since 1994, this includes **more than 600 IAEA inspections** at five U.S. facilities containing material removed permanently from weapons programs. The United States covered the costs for such inspections through the U.S. voluntary contribution to the IAEA.

- This includes nearly three metric tons of plutonium declared excess to weapons under IAEA safeguards at the KAMS Facility at the Savannah River Site in South Carolina. KAMS is the first plutonium storage facility in the world to implement remote monitoring, which enabled the IAEA to expand and develop remote monitoring techniques that will be useful in other facilities worldwide.

• The United States accepted all provisions of the IAEA's Model Additional Protocol, excluding only instances where its application would result in access by the IAEA to activities with direct national security significance to the United States or to locations or information associated with such activities.

- The United States reported 264 locations and activities in the U.S. initial declaration under the AP in 2009. The United States has transmitted an updated annual declaration to the IAEA each year since, with more than three hundred declarations in each subsequent year.
- The United States hosted two complementary access visits from the IAEA under the U.S. Additional Protocol in 2010. These were the first such visits conducted in the territory of an NPT nuclear weapon state.
- The United States has also made regular reports to the IAEA of the export of items enumerated in Annex II of the U.S. Additional Protocol.

Multilateral Safeguards Support

• Since 1977, the United States has provided new tools, technology, experts and other resources to improve the effectiveness and efficiency of safeguards implementation through the United States Support Program (USSP) to IAEA Safeguards.

• Since 2010, the United States has **pledged $182 million** in extra-budgetary funding for IAEA safeguards work, above and beyond our contribution to the IAEA regular budget.

- Since 2010, this funding has supported initiation of over 125 new tasks through the USSP, promoting the strengthening of safeguards through direct and in-kind support to the IAEA, including **providing over 35 staff**

in the form of Junior Professional Officers and Cost Free Experts, over 50 training courses and workshops, and supported the procurement of nearly 20 different safeguards equipment systems. We have also developed and transferred numerous safeguards technologies to international partners, including the IAEA.

- Since 2010, the United States has provided **almost $28 million** in extrabudgetary funds to upgrade the IAEA Safeguards Analytical Laboratories.
- **A recent example of a technology that the United States developed and transferred to the IAEA is the Remote Monitoring Sealing Array (RMSA). The RMSA enables the IAEA to remotely monitor storage of some types of nuclear material and the IAEA has approved the RMSA for safeguards use. The IAEA currently uses an earlier version of the RMSA at the KAMS facility and it has resulted in a significant reduction in the number of inspections at KAMS.**

Bilateral Safeguards Support

- The United States has engaged **nearly 50 countries** to improve safeguards infrastructure, to include best practices and training workshops on Additional Protocol implementation, strengthening State Systems of Accounting for and Control of Nuclear Material, quality management, non-destructive assay, and safeguards regulatory development. Through these and other workshops, the United States has trained **more than 2,800 foreign practitioners** in safeguards since 2007.
  - Since 2010, the United States has held **more than 90 training courses and workshops** on safeguards implementation for countries in Africa, Europe, the Middle East, Central Asia, East Asia, Southeast Asia, and South America. Recent examples include:
    - **An international workshop at Argonne National Laboratory in August 2014 to address issues facing countries preparing to bring the Additional Protocol into force and develop processes for effective implementation; and**
    - **A regional workshop in Kenya in March 2015 for the development of safeguards-related regulatory documents.**
  - **The United States cooperates with countries with advanced fuel cycle facilities to provide technical expertise for developing instrumentation and systems to improve the effectiveness and efficiency of safeguards implementation. The United States works with international partners to test newly developed safeguards equipment.**
  - **NGSI has concluded over 240 projects with international partners and has deployed over 40 customized or new safeguards technologies in partner countries.**

Safeguards Education and Training

- Through the NGSI, the United States seeks to recruit, educate, train, and retain a new generation of international safeguards specialists for positions in the United States and at the IAEA. This initiative has expanded safeguards education and training opportunities through a variety of mechanisms:
  - Developed non-proliferation university curriculum at over a dozen universities;
  - Sponsored Laboratory internships, graduate and post-graduate research and fellowship opportunities;
  - Published a nuclear safeguards textbook available for free download; and
  - Developed and sponsored six annual short courses on safeguards and non-proliferation topics.
  - To date, **over 1000 students and young professionals** have completed NGSI safeguards courses and approximately 350 have participated in NGSI-funded internships.
    - **More than half of NGSI's post-graduate alumni have gone on to staff positions at the IAEA or U.S. National Laboratories.**

ii. Export Controls

- The United States maintains a rigorous and comprehensive system for nuclear export controls and has worked for years to strengthen international nuclear export control regimes and assist states in implementing regime requirements. Export controls are a tool to facilitate commerce by providing assurances to suppliers that exported equipment is used for peaceful purposes.
- Through Nuclear Suppliers Group (NSG) bodies, including the Consultative Group and the Technical Experts Group, the United States continues to work to update NSG lists and guidelines to conform to the evolving nature of proliferation and nuclear trade.
- The United States updated U.S. regulations related to export control of nuclear material, nuclear equipment and dual-use items following the Fundamental Review of the NSG control lists completed in 2013.
- The United States also continues to support export control and related border security training and assistance programs worldwide. **The Export Control and Related Border Security (EXBS) Program is the U.S. Government's premier initiative to help partner countries improve their strategic trade control and related border security systems, implemented through various U.S. Government agencies and other organizations. Each year the EXBS Program carries out numerous outreach and capacity-building activities across the globe in order to prevent the proliferation of weapons of mass destruction and destabilizing accumulations of advanced conventional weapons. Since the last NPT Review Conference, the EXBS Program has completed over 1,700 activities including:**

- **Donating approximately $45 million in state-of-the art detection, inspection, and interdiction equipment to our program partners to enhance their radiation detection and border protection capabilities;**
- **Training for over 7,500 partner country officials in the development of enforcement techniques and capabilities, including mechanisms for targeting, detection, inspection, and disposal of proliferation-relevant cargo, as well as specialized training for border control and enforcement agencies, such as commodity identification and detection and interdiction techniques at air, land, sea, and rail environments;**
- **Providing over 50 legal and regulatory workshops, consultations with subject matter experts, and regional seminars to develop export control frameworks that conform to international standards for regulating trade in items on the control lists of the multilateral export control regimes and help meet their obligations pursuant to important U.S. and international initiatives, including UN Security Council resolution 1540; and**
- **Sponsoring several regional and international conferences bringing policymakers and technical experts together to share best practices and to strengthen national strategic trade control systems, including most recently the 14th International Export Control Conference in the United Arab Emirates in March 2014, which included 313 participants from 74 different countries. Panels included discussions about proliferation threats and challenges, methods to manage scarce resources, the need to preserve a safe and open trading system, and strategies to enhance information-sharing. EXBS also sponsored the 16th Nuclear Smuggling International Technical Working Group in Kyiv, Ukraine in June 2011.**

iii. Nuclear Security

- Nuclear terrorism represents the most immediate and extreme threat to global security, requiring a strong and enduring commitment to domestic and worldwide action. The United States continues to apply new approaches and learn from the experience of others in order to remain ahead of an evolving threat environment.

Multilateral Nuclear Security Efforts

- The United States launched the Nuclear Security Summit process with President Obama's Prague Speech in 2009. This head-of-state level forum first met in 2010 in Washington, with subsequent Summits in Seoul in 2012 and The Hague in 2014. President Obama will host a fourth Summit in the United States in 2016. The Summits have raised awareness on the importance of nuclear security worldwide, and have resulted in efforts to (1) reduce the amount of dangerous nuclear material globally, (2) improve security of nuclear material and radioactive sources, and 3) improve international cooperation to reduce the threat posed by nuclear terrorism.

- The Summit process has elicited dozens of national and multilateral commitments and tangible results that have enhanced nuclear security, as well as led to expanded multilateral and bilateral cooperation on nuclear security with dozens of countries worldwide. Together we have:
  - Established a global network of senior level experts working on nuclear security in 53 governments and 4 international organizations;
  - Removed and disposed of approximately 3 metric tons of vulnerable Highly Enriched Uranium (HEU) and plutonium;
  - Completely eliminated HEU and separated plutonium within the borders of eleven countries and Taiwan;
  - Successfully converted 24 HEU nuclear reactors in 14 countries to Low Enriched Uranium (LEU) fuel use or verified those reactors as shut down;
  - Garnered the commitment of 125 countries to follow the Code of Conduct on the Safety and Security of Radioactive Sources and the Supplementary Guidance on the Import and Export of Radioactive Sources;
  - **Helped secure 218 buildings in 5 countries storing weapons-usable nuclear materials through physical security upgrades;**
  - Equipped **over 550 international sites with radiation detection systems** and provided **over 76 mobile radiation detection vans** to partner countries to combat illicit trafficking in nuclear and radiological material;
  - **Requested international advisory reviews of nuclear related activities by the IAEA to assist 13 other countries that did so since the first Summit; and**
  - **Taken steps to build national capabilities to counter nuclear smuggling, including increased law enforcement and intelligence efforts to investigate nuclear smuggling networks, increased use of radiation detection systems both at and inside national borders, and increased nuclear forensics capabilities and legal training to in twenty countries to ensure conviction of criminals arrested for smuggling these dangerous materials.**
- Additionally, the United States is the largest national contributor to the IAEA's Nuclear Security Fund. Since 2010, the United States has provided **approximately $59 million**, which has supported:
  - Cost Free Experts, Junior Professional Officers and consultants providing important expertise and support in specific fields in the form of supplemental staff;
  - Advisory services (missions and technical visits) to IAEA Member States to establish the necessary infrastructure to protect nuclear and other radioactive materials from theft and diversion, protect nuclear installations and transport against sabotage and other malicious acts, and to combat illicit trafficking in nuclear and other radioactive materials;
  - Development of Nuclear Security Series guidance documents; dissemination of concepts and procedures for dealing effectively with

nuclear and radiological threats through international conferences, training courses, seminars, and workshops;

- The IAEA's Incident and Trafficking Database, which facilitates the exchange of authoritative information on incidents among States, and is an asset helping participating States and selected international organizations to share information on nuclear and other radioactive materials out of regulatory control;
- 50 IAEA International Physical Protection Advisory Service (IPPAS) missions in other countries since 1996 and helped revise the IPPAS Guidelines to be consistent with current international standards; and
- IAEA Assistance to Member States in the development of an infrastructure, including equipment, for the implementation of nuclear security at major public events, such as sports or political gatherings.

Bilateral Nuclear Security Efforts

- The United States is committed to continuing its leadership on this vitally important issue through its bilateral engagements worldwide.
- The United States has worked with partners to convert from HEU to LEU or verify the shutdown of **92 civilian research reactors and isotope production facilities**, thereby eliminating the use of HEU at these facilities;
  - The United States has also assisted 26 countries and Taiwan with the elimination of all HEU on their territories, and removed or confirmed disposition of more than 5 metric tons of vulnerable HEU and plutonium, enough for more than 200 nuclear weapons;
  - Working with our partners, the United States assisted with the downblending of **16.8 metric tons of civil HEU** and helped reduce the numbers of buildings and sites with weapons-useable nuclear materials;
  - **The United States through its Defense Threat Reduction Agency spent nearly $160 million and employed 24 personnel in 2014 pursuing counterproliferation programs, which included providing training and equipment to personnel from over 30 countries.**
  - U.S. bilateral nuclear cooperation agreements require that nuclear material transferred or produced as a result of these agreements is subject to adequate physical security. To ensure that physical protection measures over U.S.-obligated nuclear materials are comparable to the recommendations in IAEA publication INFCIRC/225, the United States has conducted **over 190 bilateral assessment visits to 50 countries** since 1974;
  - Additionally, the United States helped **complete security upgrades at 1,100 civilian buildings around the world containing high-priority at-risk radiological materials in 63 countries** since 2010 and helped **secure approximately 1,800 buildings** containing vulnerable, high-activity radiological sources in more than 100 countries since this cooperation was initiated;

- **The United States has taken tangible steps to counter nuclear and radiological smuggling and has negotiated bilateral Joint Action Plans with 13 partner countries outlining priority steps that we will jointly take to prevent, detect, and respond to nuclear and radioactive materials smuggling activities;**
- The United States has cooperated to procure over 300 vehicles and railcars for secure transportation of nuclear material in the United States and develop an automated transportation security system to ensure security of nuclear material shipments;
- **The United States continues to provide international training on insider threat mitigation and human reliability programs, in order to address the risk that a malicious insider could divert nuclear material, technology, or expertise;**
- The United States and our partners have jointly designed, completed, or upgraded several training centers to expand nuclear security training capabilities in partner countries;
- Since 2009, the United States has engaged bilaterally with 14 countries and international organizations on technical nuclear forensics best practices. Most notably, the United States, Japan, and France have made significant contributions to the area of uranium age dating, which is a key nuclear forensics measurement. The United States has also cooperated extensively with the IAEA on training and development of implementing guides on nuclear forensics methodologies; and
- **In 2012, the United States hosted the first International Regulators Conference on Nuclear Security. This conference, which was attended by nearly 500 participants from over 30 countries, enhanced dialogue between security regulators worldwide.**

Improving Nuclear Security in the United States

- The United States also continues to improve domestic nuclear security by taking a number of actions such as:
  - Hosted an IAEA International Physical Protection Advisory Service (IPPAS) mission in 2013 to the U.S. Nuclear Regulatory Commission and to the HEU reactor at the National Institute of Standards and Technology (NIST) Center for Neutron Research.
  - **Installed security upgrades at over 240 domestic facilities.**
  - **Completed an upgrade to the physical security infrastructure of the Y-12 Plant including barriers, intrusion detection, and access control. Deployed additional razor wire, instituted new patrols, and installed additional physical barriers.**
  - **Completed construction on the High Enriched Uranium Materials Facility at Y-12 Nuclear Security Complex which is one of the most robust secure facilities in the world consolidating significant amounts of highly enriched uranium.**

- **Completed upgrades to the physical security infrastructure at the Los Alamos National Laboratory including improved video and assessment capabilities, enhanced perimeter delay, and upgraded personnel and vehicle entry control features/facilities.**
- **Completed removal of special nuclear material items requiring highest levels of physical security protection from Lawrence Livermore National Laboratory.**
- **Completed an upgraded alarm management system/access control system installation at Sandia National Laboratories.**
- **Procured additional protective force vehicles and equipment, and improved monitoring of Physical Security Systems and monitoring of Physical Security Systems across all Department of Energy facilities.**
- **Removed 14,599 disused and unwanted radioactive sources from sites throughout the United States.**
- **Recovered over 4,390 domestic radiological sources from licensees that have identified no further use for those sources and repatriated U.S.-origin sources where feasible.**
- Continued to update existing regulations regarding the physical protection of nuclear plants and materials, taking into consideration the latest version of INFCIRC/225.
- **Implemented a cybersecurity regime for nuclear power plants that provides strong protection against cyber threats. The United States continues to work to apply a graded approach to the program, using risk insights.**
- **Amended domestic security regulations in 2013 for radioactive materials and codified requirements that had been imposed for risk-significant radioactive materials following the terrorist attack on September 11, 2001. These regulations established security requirements for IAEA Category 1 and 2 radioactive materials, as well as for shipments of small amounts of irradiated reactor fuel.**

iv. Nuclear-Weapon-Free Zones

- In May 2011, the United States submitted the protocols to the Africa Nuclear-Weapon-Free-Zone and South Pacific Nuclear-Weapon-Free Zone treaties to the U.S. Senate for its advice and consent to ratification.
- The United States and the other P5 states signed the Protocol to the Central Asia Nuclear-Weapon-Free Zone Treaty in May 2014. **The Administration submitted this Protocol to the Senate for its advice and consent in April 2015.**
- The United States is committed to signing the revised Protocol to the Southeast Asia Nuclear-Weapon-Free Zone (SEANWFZ) Treaty and continues to stand ready to assist in resolving remaining concerns.
- In accordance with the 2010 NPT Review Conference Action Plan, the United States continues to support engagement of regional states on a conference on

the establishment of a Middle East zone free of weapons of mass destruction and their means of delivery so that it can be held as soon as the regional states reach consensus on arrangements.

v. Compliance and Other Related Issues/Concerns

- In support of diplomatic efforts to restore compliance and respond to compliance challenges within the framework of the NPT, the IAEA and the UN Charter:
  - **The United States and its P5+1 partners, coordinated by the EU, have reached a political understanding with Iran that forms the basis for a long-term, comprehensive solution to the Iran nuclear issue. A Joint Comprehensive Plan of Action (JCPOA), if fully implemented, will give the international community confidence that Iran will not obtain a nuclear weapon and that its nuclear program is exclusively peaceful going forward. The United States and its partners aim to conclude talks on the JCPOA by June 30, 2015.**
  - The United States continues to promote implementation of Iran-related United Nations Security Council resolutions.
  - The United States remains open to authentic and credible negotiations to bring North Korea into compliance with, **its commitments under the September 2005 Joint Statement of the Six-Party Talks and its obligations under the relevant UN Security Council resolutions. We have made it clear however that any resumption of talks must be premised on North Korea's demonstrated commitment to take concrete steps toward complete, verifiable and irreversible denuclearization. We continue to work with our partners and the entire international community to make it clear to North Korea that we will not accept North Korea as a nuclear-armed state, and continue to hold it to its international obligations and commitments** including to abandon all its nuclear weapons and existing nuclear programs, and return, at an early date, to the NPT and IAEA safeguards.
  - The United States continues to strengthen and expand the scope of sanctions on North Korea, and continues concerted efforts to achieve robust domestic and international implementation of existing national and UN sanctions to impede North Korea's proliferation activities and curtail its ability to sustain and advance its nuclear and ballistic missile programs.
  - The United States continues to hold Syria accountable for noncompliance with its IAEA safeguards agreement and calls on Syria to take the necessary steps to meet its non-proliferation obligations and cooperate fully with IAEA requests for access to all relevant locations, materials and persons.

vi. Other Contributions to Nuclear Weapons Non-proliferation

- The United States continues to support the work of the Committee established pursuant to United Nations Security Council Resolution (UNSCR) 1540 to foster its full implementation, including the legally binding obligations on all States related to a range of nuclear proliferation activities, to account for and

secure nuclear related materials, and to develop and maintain border and export controls on such items. For example:

- **Nationally, the United States has taken measures to implement all of the more than two hundred UNSCR 1540 obligations and recommendations.** The United States in 2013 provided the 1540 Committee with a report on these efforts including measures related to nuclear non-proliferation, and in 2014 submitted to the Committee a set of national effective practices, including those practices designed to combat nuclear proliferation.
- **Internationally, the United States supports the full range of Committee efforts to engage all 193 UN Member States and cooperate with nearly fifty international or regional organizations on implementing all aspects of the resolution. This support includes a $4.5 million contribution to the UN Trust Fund for Global and Regional Disarmament Affairs for activities to foster implementation of the resolution.**
- **Since its initial contribution in 2011, the U.S. contributions to the Trust Fund have helped UN Office for Disarmament Affairs support more than 70 activities, all of which promoted full implementation of UNSCR 1540 nuclear non-proliferation obligations and universal adherence to key nuclear non-proliferation treaties and conventions. In addition, the United States supports regular consultations between the 1540 Committee and the IAEA, the inclusion of nuclear non-proliferation topics in its country-specific dialogues, and participation by the Committee in international and regional nuclear non-proliferation activities**, such as the 2nd ASEAN Regional Forum Confidence Building Measures on UNSCR 1540, which focused on nuclear security issues.

- The United States leads and supports the implementation of other major activities to confront the threat posed by terrorist acquisition of nuclear and other radioactive material including the Global Initiative to Combat Nuclear Terrorism (GICNT), and the Counter Nuclear Smuggling Program (CNSP).
  - **The United States continues to Co-Chair the GICNT, which is a multilateral partnership of 86 partner nations and four official observers committed to strengthening global capacity to prevent, detect, and respond to nuclear terrorism.**
    - **Since it was launched by the United States and Russia in 2006, the GICNT has held over 70 multilateral activities, in particular across the GICNT's focus areas of nuclear forensics, detection, and emergency preparedness and response, which have brought together technical, operational, and policy experts.**
    - **These activities have explored key challenges in difficult or emerging areas of nuclear security, such as introducing nuclear forensic evidence in the courtroom, approaches to investigating illicit trafficking of nuclear material, and public messaging in response to a nuclear security incident, and have produced best practices and models for overcoming these challenges.**

- **As a complement to the multilateral activities of the GICNT, the United States, through the Department of State, diplomatically engages partner nations to build national capacities to counter nuclear and radiological material smuggling under the CNSP.**
- **Specifically, CNSP activities focus on increasing capabilities to respond to, investigate, and prosecute incidents of nuclear or radiological material smuggling, including by enhancing national nuclear forensics expertise.**

- **The United States supports international efforts to counter proliferators' ability to abuse the global financial system to support the proliferation of weapons of mass destruction (WMD).**
  - **The United States has implemented both targeted financial sanctions and broader financial measures to comply with United Nations Security Council resolutions related to the prevention, suppression, and disruption of WMD proliferation and its financing.**
  - **The United States also strongly supports the work of the Financial Action Task Force (FATF) on enhancing states' efforts to counter proliferation finance. The FATF has issued detailed guidance to assist jurisdictions with the implementation of the financial provisions in proliferation-related Security Council resolutions as well as ensuring effective domestic-level cooperation and coordination on proliferation finance.**
  - **The United States regularly engages partners to reinforce and encourage implementation of effective measures to combat proliferation financing.**
- The United States is supporting efforts by NPT Parties to address the prospect of withdrawal by a State Party, including through consultations on recommendations for actions Parties could take consistent with the provisions of the Treaty.

Section III: Reporting on National Measures Relating to the Peaceful Uses of Nuclear Energy

i. Promoting Peaceful Uses

- The United States is dedicated to international cooperation on the uses of nuclear energy for peaceful purposes in accordance with Article IV of the NPT. The United States meets its commitment in a variety of ways, including through nuclear trade and technical assistance through the IAEA and other means.

Nuclear Trade and Technical Assistance

- The United States supports the safe implementation of peaceful nuclear technology abroad through licensing transfers of nuclear material, equipment, and assistance.
- Since 2010, the United States has made over $2.5 billion worth of nuclear equipment, materials and technology available to States involved in nuclear

power programs in accordance with agreements for cooperation establishing the highest levels of non-proliferation, safety, and security standards.

- Since 2010, the United States has issued **595 licenses** supporting exports of nuclear material, equipment, technology, and transfers of assistance benefitting at least 35 countries and the European Union.
- To facilitate peaceful nuclear trade and to improve security, the United States has worked to streamline the licensing process for nuclear material, equipment, technology, and assistance transfers.

Bilateral Cooperation

- The United States has in place 22 bilateral agreements pursuant to Section 123 of the U.S. Atomic Energy Act (123 Agreements) that provide for cooperation with 49 partners (including the 28 EURATOM states), the International Atomic Energy Agency, and the authorities on Taiwan. We are pursuing bilateral agreements with additional partners. These agreements have fostered the development of over 70 GW of clean nuclear power worldwide.
- In addition, to supply LEU for the continuing operation of research reactors, the United States has, since 2010, entered into IAEA Project and Supply Agreements (PSAs) with Chile, Mexico, Jamaica, and Peru.
- To support the safe and secure use of peaceful nuclear applications, the U.S. Department of Energy has 20 bilateral cooperative arrangements. The Nuclear Regulatory Commission has bilateral technical information exchange arrangements with **45 states** (including EURATOM states) and Taiwan. More partnerships are being formed.
- In 2011, the United States announced the availability of nuclear fuel from the American Assured Fuel Supply (AAFS), a reserve of approximately 230 tons of LEU, which is derived from down-blending 17.4 metric tons of HEU declared excess to defense needs. The AAFS is available to any partner country of the United States if such a partner were to face a critical need for enriched uranium that could not otherwise be met by the commercial market.
- The United States contributed nearly $50 million to the IAEA to support establishment of a fuel bank of LEU to assure Member States of a reliable supply of fuel for peaceful nuclear reactors.

Capacity Building

- The U.S. Department of State's Partnership for Nuclear Security (PNS) seeks to promote a self-sufficient nuclear security culture ingrained in partner countries nuclear technical organizations. PNS works around the world with partner counties that are considering or managing nuclear research facilities and power plants. In order to do so, PNS:
  - Works with partner institutions to develop and sustain trustworthiness programs (i.e. human reliability programs, fitness-for-duty, etc.) to mitigate potential insider threats at nuclear facilities.

- Provides training for nuclear technical experts to promote and demonstrate security culture as a vital component of nuclear applications and operations.
- Empowers partners to institutionalize nuclear security trainings through train-the-trainer initiatives, including professional development courses and academic curriculum development.

• Through the IAEA, the International Framework for Nuclear Energy Cooperation, and bilaterally, the United States supports the efforts of countries considering nuclear power to build the national infrastructure needed to pursue the highest standards for safety, security and non-proliferation.

• **Through assistance activities such as the Radiation Sources Regulatory Partnership program and the International Regulatory Development Partnership program, the U.S. Nuclear Regulatory Commission has, since 2010, provided support, both bilaterally and through the IAEA to over 130 countries, and contributed a total of nearly $17 million both cash and cost free contributions to IAEA's nuclear safety and security activities.**

ii. Technical Assistance through the IAEA to its Member States

Technical Cooperation Program and Peaceful Uses Initiative

• Since 2010, the United States has provided **more than $190 million** to the IAEA to support technical cooperation and promotional programs. This figure includes:

- **Over $108 million to support the IAEA Technical Cooperation Fund (TCF),** or about 25 percent of the total. Technical cooperation (TC) projects are having a positive humanitarian impact in the developing countries of Africa, Latin America, Asia, and Eastern Europe in the fields of human health, agriculture and food security, isotope hydrology and water management, the environment and climate change, and nuclear energy infrastructure and sustainability. The U.S. TCF contribution, faithfully furnished for decades, supports on a collective basis the same kinds of projects supported individually by U.S. contributions to the IAEA's Peaceful Uses Initiative, as described below.
- **Over $33 million to support IAEA technical cooperation above and beyond projects funded through the TCF.** This covers in-kind and monetary support towards training, technical expertise, fellowships, and cost-free experts. For example, such U.S. support contributed to:
  - Training in nuclear applications, including by sending **over 1,400 experts** to participate in IAEA technical meetings, workshops, and conferences in 2014.
  - Initial phase of IAEA efforts to renovate the IAEA Nuclear Sciences and Applications Laboratories in Seibersdorf (ReNuAL). **At the 2015 NPT Review Conference, the United States announced an additional commitment of $2 million towards this project.**
- **Over $50 million to support the IAEA Peaceful Uses Initiative (PUI).** Contributions to the PUI from the United States and other international

donors have provided the IAEA with additional flexibility and resources to support high priority IAEA Member State projects and to respond to unforeseen challenges, sometimes on short notice. More than 150 IAEA Member States have benefitted from the PUI. Individually or partnering with other PUI donors, the United States has contributed through the PUI to IAEA technical assistance activities that include:

- Establishment of the Ocean Acidification International Coordination Center at the IAEA Environment Laboratories in Monaco to promote global actions against ocean acidification;
- **Building capacity to detect, quantify, and reduce the adverse impacts of harmful algal toxins on seafood safety in countries throughout the world; development of a Caribbean observing network for ocean acidification**;
- Design of a large-scale water resource management project to respond to sustained drought and widespread starvation and malnutrition in the Sahel region of Africa;
- Development of a sustainable zone free of the tsetse fly in the Niayes region of Senegal to relieve the burden of trypanosomiasis and increase food and agricultural productivity;
- **Improvement of veterinary laboratory capacities in Sub-Saharan Africa for rapid and specific diagnosis of transboundary animal diseases;**
- Enhancement of laboratory capacity in Latin America to ensure food safety and reduce the threat that fruit flies pose to agriculture resources; **control of fruit flies in the Balkans and the Eastern Mediterranean region to enhance agricultural productivity; development of treatments for use worldwide against exotic fruit flies to promote the safe import, export, and domestic movement of commodities;**
- **Building capacity to improve food safety and quality in numerous countries throughout the world through nuclear technology and sustainable technology transfer to developing countries;**
- **Assessment of the impact of climate change on polar and mountainous regions; mitigation of climate change effects in Southeast Asia by assessing sediment processes, adapting rice-based cropping systems, and improving crop management strategies;**
- **Enhancement of the capacity of national monitoring teams in Africa to ensure early detection of zoonotic diseases, including the Ebola Virus Disease, under high biosafety conditions;**
- Assessment and strengthening of national capabilities to detect and treat cancer, including radiotherapy treatment capacity, in more than 30 countries around the world;

- Advancement of education and training in nuclear medicine, as well as application of nuclear techniques to improve the treatment of cardiac and cancer patients;
- **Enhancement of national capabilities to respond to nuclear and radiological emergencies in Africa;**
- Study of the possible impact of radioactive releases following the Fukushima Daiichi Nuclear Power Plant accident;
- **Improvement of the control of radioactive sources in Africa and the Mediterranean region;**
- **Strengthening of biological dosimetry in the Asia and Pacific region;**
- **Promotion of the sustainable development of uranium resources in Africa; and**
- **Development of nuclear power infrastructure, including capacity building of human resources and legal and regulatory framework, in numerous countries throughout the world.**

• **At the 2015 NPT Review Conference, the United States announced an additional commitment of $50 million to the PUI over the next five years.**

iii. Nuclear Safety & Civil Nuclear Liability

• Through the Nuclear Regulatory Commission, the United States has concluded arrangements for technical cooperation on nuclear safety matters with 45 countries, EURATOM, and Taiwan.

• **In early 2015, the United States and other Parties to the Convention on Nuclear Safety adopted the Vienna Declaration on Nuclear Safety, confirming their commitment to the legal obligations under the CNS and implementing safety principles and lessons learned arising from the 2011 Great Tohoku earthquake, tsunami and nuclear power plant accident in Japan.**

• The United States has participated extensively on nuclear safety issues within the IAEA and other international venues.

• The United States **takes an active role in the G7 Nuclear Safety and Security Group that seeks to, among other things, achieve an efficient and effective** implementation of the IAEA Action Plan for Nuclear Safety.

• The United States has actively promoted the Convention on Supplementary Compensation for Nuclear Damage (CSC) to be a global nuclear liability regime and urged other countries to join. **With Japan's ratification, the CSC entered into force on April 15, 2015.**

• **The United States works closely with the G7/EC to support Ukraine in returning the damaged Chornobyl Unit 4 reactor site to an environmentally safe and stable condition. As the largest bilateral donor to the EBRD Chornobyl Shelter Fund, the United States seeks to put this legacy issue to rest.**

- To promote nuclear safety in over 60 Member States and at the regional level across the globe, the United States has made regular extra-budgetary contributions to the IAEA for Nuclear Safety, including for the Nuclear Safety Action Plan. The United States contributed **$3.8 million in 2014, and since 2010 has contributed $16 million.**

- The United States has contributed funding and personnel to the Asian Nuclear Safety Network which assists countries in the area planning to have domestic civil nuclear power programs to build infrastructure.

iv. Other Related Issues

Nuclear Non-proliferation and Disarmament Outreach and Education

- The United States has long supported the role of education and training programs to maintain a healthy global nuclear non-proliferation regime. Drawing on our cadre of non-proliferation and disarmament experts, we are working to promote public awareness, develop educational tools, and expand career opportunities for the next generation of non-proliferation and disarmament experts. The U.S. Government is:

  - Working with the Association for Diplomatic Studies and Training to record oral histories of senior arms control and non-proliferation officials and leaders in the field for public access through the Library of Congress;

  - Engaging with the UN Association to bring experts to classrooms to guide simulations of current non-proliferation and disarmament scenarios;

  - Supporting the annual Generation Prague Conference which has brought together **approximately 300 young professionals and experienced practitioners** from around the world to exchange perspectives on issues concerning them and their home countries. The purpose of the conference is to focus on the role of younger generations in fulfilling the President's vision of a world without nuclear weapons;

  - Making use of virtual and in-house internships and programs that allow students from high school and upwards to work directly with policy-makers and scientists for up to two years and demonstrating the importance of STEM (science, technology, engineering, and math) to the field of non-proliferation and arms control; and

  - Hosting and attending hundreds of outreach events that demonstrate the U.S. commitment to educate U.S. citizens and citizens of the world about the threats posed by weapons of mass destruction and the opportunities to promote international peace and security.

- The United States has assisted over 30 international universities in incorporating nuclear security into graduate and undergraduate nuclear engineering curriculums and trained over 4,000 students from more than 120 countries through IAEA physical protection training programs.